this attempt to elicit reconsideration and as evidence of the Applicants' bona fide efforts to advance this application.

5. Claim 1: "method comprising a single specific binding pair, or a first and second specific binding pair" – Applicants elect a single specific binding pair, with traverse.

The Examiner states that methods using one specific binding pair and a first and second specific binding are patentably distinct. The Applicants concur in part with the Examiner, and respectfully disagree in part. First, the Applicants agree that they are patentably distinct but draws the Examiner's attention to the fact that use of a first and second binding pair is contained in the invention of Group VI whereas Group I (the elected invention) makes use of only a single specific binding pair. Second, the Applicants traverse the request for election of species and requests that this requirement for election of species be withdrawn as being moot because the only claims in which a first and a second specific binding pair are used in a method are in non-elected Claims 67 – 86, Group VI.

6. Claims 1, 7, 8, 50, 63: "specific anchoring enzyme" – Applicants elect *Nla*III, with traverse.

The Examiner states that the claims are directed "to the following patentably distinct species: A specific anchoring enzyme". The Examiner further indicates that different anchoring enzymes have "different molecular sequences, recognize different substrates, and so have materially different modes of action and effect. (emphasis added)

First, the Applicants are not claiming an anchoring enzyme and therefore the anchoring enzyme is not a species.

Second, the anchoring enzyme in Claim 1, 50 and 63 and as defined in the specification is a restriction endonuclease that has a high probability cleaving most ("a substantial number") of the DNA fragments generated in an earlier step (step c) of the invention "at least one time". It is well known that restriction enzymes cleave DNA in response to a specific sequence of nucleotides (i.e., in response to their specific "recognition sequence"). Thus, all restriction enzymes have the same mode of action and effect – they all recognize a sequence (albeit a sequence specific to the particular enzyme) of DNA nucleotides and all cleave the DNA upon such recognition. Thus, regardless of what restriction endonuclease is used as the anchoring enzyme, the DNA will be cleaved upon recognition of a recognition sequence. Further, it is also well known that the shorter the recognition sequence, the more frequently a piece of DNA will be cleaved by a restriction endonuclease. Thus, operationally and in the end result and outcome of the practice of the invention, use of one restriction enzyme versus another would be patentably indistinct. Numerous examples of appropriate anchoring enzymes are given in the specification (see paragraph [0026]). Using one anchoring enzyme rather than another would not be a patentably distinct invention.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

7. Claims 1, 50: "type IIS restriction enzyme" – Applicants elect *Mme*I, with traverse.

First, the Applicants are not claiming a type IIS restriction enzyme and therefore the type IIS restriction enzyme is not a species.

Second, type IIS restriction enzymes are those that recognize a DNA sequence and cleave at a distance from that sequence. Each of the examples of the present invention makes use of

*Mme*I because this enzyme cleaves further away from its recognition sequence than any other type IIS restriction enzyme presently known (see paragraphs [0029-0030]). However, it is known by those of ordinary skill in the art that it is likely that new restriction endonucleases will be discovered over the course of time. In those discoveries it is likely that new type IIS enzymes will be found and further, it is possible that they may cleave at distances greater than the 18/20 base pair distance of *Mme*I. Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

8. Claim 1, 11: "specific binding pair" Applicants elect biotin/avidin with traverse.

The Examiner indicates that the claims are directed to patentably distinct "a specific binding pair". The Applicants wish to respectfully disagree. The elected claims for a method for analyzing the organismic complexity of a sample is not claiming a specific binding pair. Since the Applicants are not claiming specific binding pairs, they cannot be considered species. Furthermore, using one binding pair versus another does not make a patentably distinct difference in this invention.

Binding pairs are well known in the art. Binding pairs that are known for use in the claimed invention may indeed be of differing design (for example a biotin/avidin pair is different from a biotin/anti-biotin antibody pair and also different from a digoxin/anti-digoxin antibody pair), but their modes of operation are identical. Use of one binding pair rather than another pair in practicing the claimed invention would be operationally indistinct, the end result would be the same, and, one binding pair versus another would be not be patentably distinct. In the specification a number of examples of specific binding pairs are given – see for example paragraph [0025].

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

9. Claim 1, 12: "solid support" Applicants elect magnetic beads, with traverse.

The Examiner indicates that the claims are directed to patentably distinct "A solid support". The Applicants wish to respectfully disagree. The elected claims for methods for analyzing the organismic complexity of a sample are not claiming a solid support at all, and use of one solid support versus another does not make a patentably distinct difference in this invention. Since the solid support is not claimed it cannot be a species.

The Examiner states that "different supports have different molecular structures that result in different bonds that have materially different design, mode of operation, function and effect."

In response, the Agent for the Applicants wishes the Examiner consider that solid supports for use in the claimed invention are well known in the art. Use of one solid support rather than another in practicing the claimed invention would be operationally indistinct and the end result would be the same. In the specification a number of examples of specific solid supports is given – see Claim 12.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

10. Claim 1, 3: "second specific binding pair that is (a) identical or (b) different to the specific binding pair of claim 1" Applicants elect (a) identical to, with traverse.

The discussion of a second specific binding pair is contained above under paragraph 5.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

11. Claims 1, 4, 16, 17: "sequencing performed by (a) pyrosequencing or capillary gel electrophoresis." The Applicants elect pyrosequencing, with traverse.

First, the Applicants are not claiming sequencing methods. Therefore, the method by which the sequences are determined cannot constitute species.

Second, in order to generate genome signature tags the sequence of the DNA pieces that are generated in practicing the invention must be determined. Various methods – manual and automated – for determining the sequences of DNA are very well known in the art. How the sequences are determined is immaterial to the operation and outcome of the invention, i.e., it does not make a difference if one uses one method versus another.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

12. Claims 1, 18-22: "a biological specimen" Applicants elect a soil sample, with traverse.

First, the Applicants are not claiming a biological specimen and therefore the specimen cannot be a species.

Second, the Examiner states that "different biological specimens have different sources that result in materially different design and modes of operation". The Agent for the Applicants respectfully disagrees and requests that the Examiner reconsider requiring this election of species. First, Claim 1, is drawn to a sample, which sample contains one or more organisms. Dependent claims 18 and 19 are not drawn to a "biological specimen" but to an environmental

sample. Dependent claims 20-22 are drawn to biological specimens and a number are identified in the Markush claim number 21. Once DNA is isolated from the sample (step b of Claim 1), regardless of what the sample is or where it was obtained, the method is unchanged. Certainly one biological specimen is not patentably different from another. Thus, the Agent respectfully requests the reconsideration of requiring election of a species of biological specimen.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

13. Reads only on a non-elected claim (Claim 23) and therefore the Agent presents no discussion of this element as it is moot through election of Group I.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

14. Claims 50-52: "A location of the SP-GSTs to the gene of focus" Applicants elect "upstream or downstream of the gene of focus", with traverse.

Reads on Claims 50-52, which in pages 1-2 of this paper, the Agent has requested be removed from Group I since the claims 50-55 constitute their own Group, Group III. Should the Examiner not wish to revise the constitution of Group I, the Applicants have elected a species, with traverse for the following reasons.

First, the Applicants are not claiming a location of the SP-GST and therefore the location cannot be a species.

The Examiner states that the "different locations on the chromosome relative to the gene of focus result in materially different design and modes of operation". The Applicants' Agent respectfully disagrees. Choosing to use this invention to generate genome signature tags inside,

upstream or downstream of a gene of focus are not patentably different inventions. Each step of the method of the invention of Claim 50 is carried out identically regardless of where the SP-GST is in relationship to the chosen gene of focus. If the Examiner would please refer to Figure 3 of the application, it should be clear that depending upon the location of the chosen primers (must be conserved across the phylum or family) the method of the invention will generate SP-GSTs that are located upstream, downstream or within the gene of focus and thus there are no material differences in design or modes of operation of the invention.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

15. Claim 50, 53-55: "A gene of focus" Applicants elect rDNA genes of eubacteria, with traverse.

Reads on Claims 50 and 53-55, which in pages 1-2 of this paper, the Agent has requested be removed from Group I since the claims 50-55 constitute their own Group, Group III. Should the Examiner not wish to revise the constitution of Group I, the Applicants have elected a species, with traverse for the following reasons.

First, the Applicants are not claiming a gene of focus and therefore the gene of focus cannot be a species.

The Examiner states that the "gene of focus" are "patentably distinct species" and that "because different genes have different nucleotide sequences and locations on the chromosome, which result in materially different modes of operation". The Applicants' Agent respectfully disagrees. First, the Applicants' invention is not claiming different genes of focus, which may or may not be patentably distinct. Second, again referring to Figure 3 of the patent application, the

method of the invention could not be diagrammed in Figure 3A if choosing different genes of focus would result in materially different modes of operation. The method of the invention is performed identically regardless of what gene of focus in chosen. The elements of the specific primers will differ from one chosen gene of focus to the next, but operationally the method of the invention is identical.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

16. Claim 1, 58: "Methods with (a) one fragmenting enzyme or (b) with a first and a second fragmenting enzyme" Applicants elect (a), one fragmenting enzyme, with traverse.

The Examiner states "Methods with (a) one fragmenting enzyme or (b) with a first and a second fragmenting enzyme. The species are independent or distinct because the different methods comprising different number of primer pairs have materially different modes of operation". The Agent for the Applicants shall assume, in the interests of advancing this case, that the Examiner meant to state that "methods comprising different numbers of fragmenting enzymes . . ." rather than "different numbers of primer pairs . . . ..

The Applicants traverse this requirement for election because the use a first and a second fragmenting enzyme versus use of only a first fragmenting enzyme is already identified as a different mode of operation by the fact that use of a first and a second fragmenting enzyme is a dependent claim, one which modifies and narrows Claim 1 which uses only one fragmenting enzyme.

Parenthetically, the Agent for the Applicants wish the Examiner to note that the Agent, upon review of the application, has realized that Claims 58 through 63 were inappropriately written as depending from Claim 1 whereas they were intended to have been drawn as depending from Claim 56. Thus, the Agent requests that Claims 58 through 63 be withdrawn from consideration if possible, or that the Examiner additionally revise the composition of Group I to include only Claims 1-22.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

17. Claims 1, 58-61: "A species of first fragmenting and a species of a second fragmenting enzyme" Applicant elects SmaI as the first fragmenting species and XmaI as the second fragmenting enzyme, with traverse.

The Examiner indicates that "each of the fragmenting enzymes fragment the nucleic [acid] in a characteristic manner and so have materially different modes of operation, function and effect. The Applicants respectfully draw the Examiner's attention to the discussion under paragraph 6 wherein the anchoring enzyme is discussed. Restriction enzymes recognize specific sequences of DNA and cleave the DNA. Thus, one restriction enzyme does not have a materially different mode of operation or function from another restriction enzyme, but certainly will have a different effect because different enzymes will cut DNA in different locations corresponding to their recognition sequence. This is the entire point of using a first and a second restriction enzyme.

Further, the Agent wishes to bring to the Examiner's attention the parenthetical note in paragraph 16.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

18. Reads only on a non-elected claim (Claim 67) and therefore the Agent presents no discussion of this element as it is moot through election of Group I.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

19. Reads only on a non-elected claims (Claim 67, 78) and therefore the Agent presents no discussion of this element as it is moot through election of Group I.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

20. Claims 1 and 9: "an amplification adapter comprising ligatable 3' overhangs that are (a) 4-fold, (b) 8-fold, or (c) 16-fold degenerate sequences" Applicants elect (c), 16-fold degenerate sequences, with traverse.

First, in the elected claims, the Applicants are not claiming variously degenerate amplification adapters and therefore they cannot be a species.

The Examiner states that the "different fold degenerate sequences have result in materially different modes of operation and effects". The Agent for the Applicants respectfully disagrees. The fold degeneracy does not affect the mode of operation of the claimed invention, but does affect the number of ligation events that are permissible in step j) of Claim 1. In fact within the specification, paragraphs [0033], [0036], the fact that a 16-fold degeneracy is needed to enable ligation to each and every possible end generated by cleavage with the type IIS restriction enzyme is noted and further it is indicated that by using a subset of the adapters,

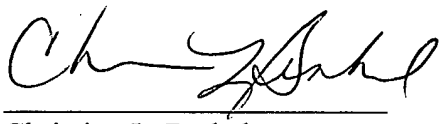
having only a 4-fold or 8-fold degeneracy, a subset of genome signature tags can be obtained. The use of 4-fold, 8-fold or 16-fold degeneracy does not affect the operation of the elected claimed invention.

Thus the Applicants request that the Examiner reconsider this request for election of species and withdraw it.

In Summary:

The Applicants have elected Group I, Claims 1-22, 50-55 and 58-63 with traverse. Should the Examiner wish to discuss this matter with the Agent for the Applicants, the contact information below may be used at any time Monday through Friday, 8:30 AM through 5:30 PM.

Respectfully submitted,



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